

PHOTOGRAPH THIS SHEET

AD-A953 667

DTIC ACCESSION NUMBER

LEVEL

INVENTORY

WAL-710/30

DOCUMENT IDENTIFICATION

**DISTRIBUTION STATEMENT A**

Approved for public release;  
Distribution Unlimited

DISTRIBUTION STATEMENT

ACCESSION FOR  
TIS GRA&I  
TIC TAB  
UNANNOUNCED  
JUSTIFICATION

☒  
☐  
☐

Y  
DISTRIBUTION /  
AVAILABILITY CODES

IST AVAIL AND/OR SPECIAL

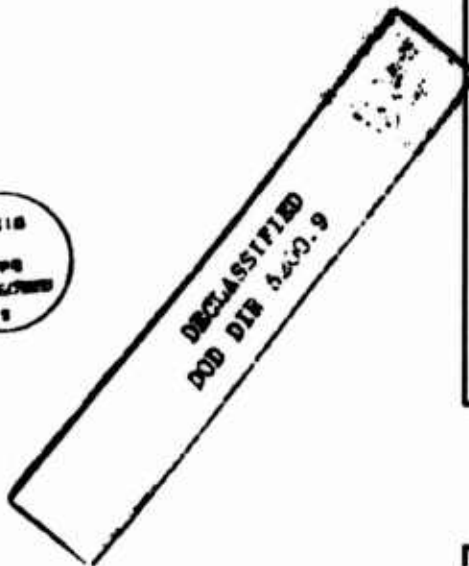
A-1		
-----	--	--

DISTRIBUTION STAMP

UNANNOUNCED

84 10 17 063

DATE RECEIVED IN DTIC



DTIC  
ELECT  
OCT 20 1984  
S C D

DATE ACCESSIONED

DATE RETURNED

REGISTERED OR CERTIFIED NO.

PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-DDAC

**Best  
Available  
Copy**

UNCLASSIFIED



AL-A333 367

REPORT NO. 710/58

SIXTH REPORT ON COMPOSITE PLATES

I C - I AND I C - V

THE USE OF INSULATING MATERIAL



D. L. HUSTON  
ST. LOUIS, MO.

REPORT NO. 710/58

WATERTOWN AIRFIELD  
WATERTOWN, MASS.

W. A. 100-100

UNCLASSIFIED

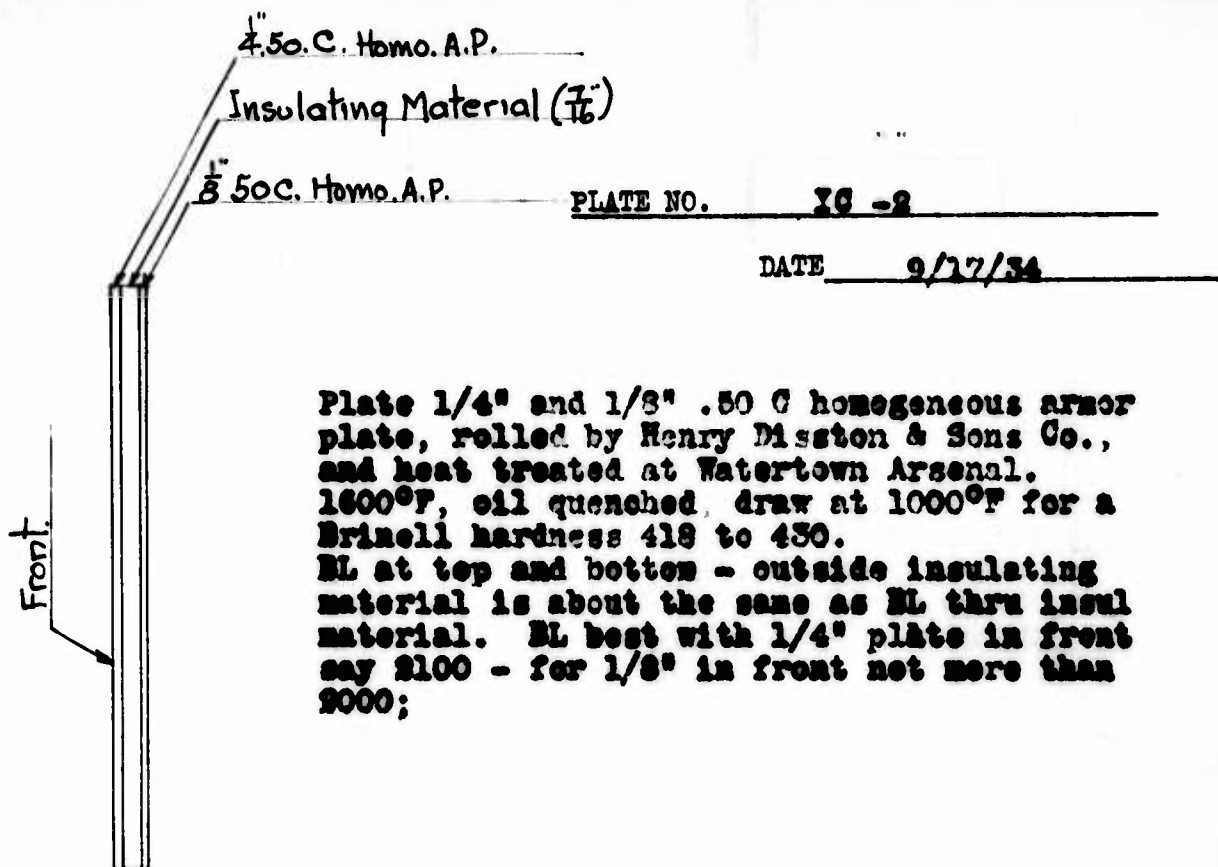


Plate 1/4" and 1/8" .50 C homogeneous armor plate, rolled by Henry Disston & Sons Co., and heat treated at Watertown Arsenal. 1600°F, oil quenched, draw at 1000°F for a Brinell hardness 418 to 430. BL at top and bottom - outside insulating material is about the same as BL thru insul material. BL best with 1/4" plate in front say 2100 - for 1/8" in front not more than 2000;

#### ARMOR PLATE COMPOSITION

C.	Mn.	P.	S.	Si.	Cr.	Mo.	Va.
.45/.55	.40/.60	<.03	<.03	.15/.25	1.10/1.30	.65/.80	.20/.30

	ROUND NO.	STRIKING VELOCITY	REMARKS
1100 fs. O#2	1	1900	no bulge
*1 1900 fs.	2	2100	above insul. no penetration.
	3	2100	just below insul. slight crack
2100 fs. O#4	4	2100	very slight crack
2100 fs. O#3			

PLATE NORMAL, 100 YD. RANGE, .30 CAL. M1922 A.P. BULLETS, MANN BARREL UNLESS NOTED OTHERWISE.

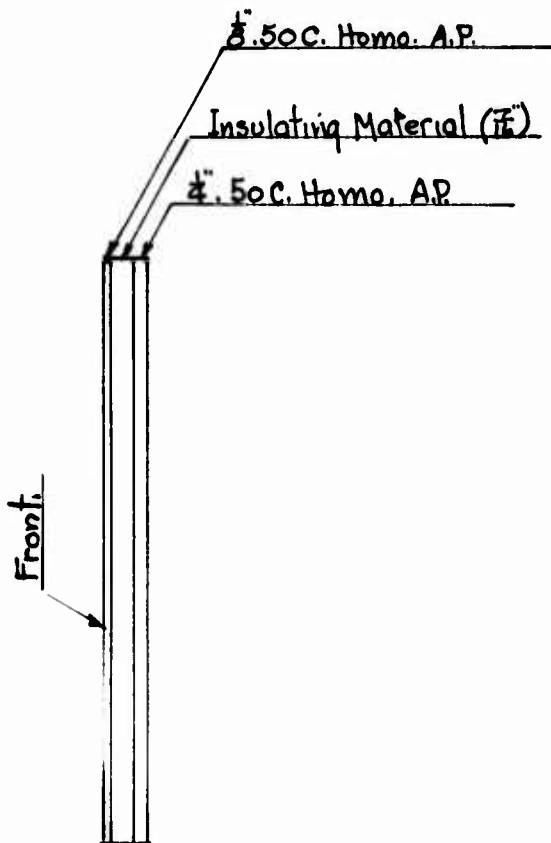


PLATE NO. IC - 1

DATE 9/17/34

Plates 1/8" and 1/4" .50 C homogeneous armor plate, rolled by Henry Disston & Sons Co., and heat treated at Watertown Arsenal. 1600°F, oil quenched, drawn at 1000°F for a Brinell hardness of 418 to 430.

#### ARMOR PLATE COMPOSITION

C.	Mn.	P.	S.	Si.	Cr.	Mo.	Va.
.45/.55	.40/.60	<.03	<.03	.15/.25	1.10/1.30	.60/.80	.20/.30

<div style="border: 1px solid black; padding: 10px; width: 400px; height: 300px; position: relative;"> <div style="position: absolute; top: 10%; left: 45%;">#3 1900 fs.</div> <div style="position: absolute; top: 35%; left: 30%;">#2 1700 fs.</div> <div style="position: absolute; top: 60%; left: 45%;">#1 1600 fs.</div> <div style="position: absolute; top: 80%; left: 35%;">#4 2100 fs.</div> </div>	ROUND NO.	STRIKING VELOCITY	REMARKS
	1	1600	very slight bulge c.i.p.
	2	1700	"
	3	1900	Bulge on back plate. hit old hole.
	4	2100	c.i.p. hose thin about 1/8"

PLATE NORMAL, 100 YD. RANGE, .30 CAL. M1922 A.P. BULLETS, MANN BARREL UNLESS NOTED OTHERWISE.

REPORT 710/30

SIXTH REPORT ON COMPOSITE PLATES

I C - 1 and I C - 2

THE USE OF INSULATING MATERIAL

by

D. J. Martin  
1st Lt. Ord. Dept.

1934

~~RESTRICTED~~  
Report No. 710/30  
Watertown Arsenal

Sept. 26, 1934

There was received from Rock Island Arsenal a sample of the insulating material used in the pilot combat car T5 and the light tank T2. Rock Island Arsenal letter dated 7/12/34, (R.A. 453/708) requested that this sample be tried out in composite plate construction.

Available Frankford Arsenal pre-loaded ammunition made the test of a 3/8" plate combination most feasible. The insulating material, therefore, was set up between a piece of 1/4" and a piece of 1/8" homogeneous, 0.50 carbon, piston plate, both heat treated as indicated to about 418 Brinell.

No increase in ballistic resistance was obtained by use of the insulating material. The two plates had an approximate ballistic limit of 2100 f. s. when fired at with the 1/4" plate in front and of 2000 f.s. when fired at with the 1/8" plate in front. The same approximate limits were obtained when shots went through the insulating material as those obtained when shots went through the two plates outside the insulating material.

The insulating material, supported on both sides, was not badly injured by the penetrations. A small hole, almost closed up, was the only indication that a bullet

~~RESTRICTED~~

core had passed through. However, where bullets hit near the edge of the insulating material, the material was badly torn and pulverized.

Respectfully submitted,

D. J. Martin  
1st Lt. Ord. Dept.



## DISTRIBUTION OF

UNCLASSIFIED

REPORT NO. \_\_\_\_\_ TITLE \_\_\_\_\_

DATE DISTRIBUTED 9/28/34 \_\_\_\_\_*Navy 4/1/35*

	Lo- cal	Other Ord. Work	Army	Navy	Private
Author	1	1	1 ✓	1	1
Lab. File	1	1	1 ✓	1	1
Main Office File	1	1	1 ✓	1	1
Chief of Ordnance	-		2 ✓	2	-
Technical Staff	-		1 ✓	1	-
Springfield Armory	-	as directed in each case	1	1	-
Watervliet Arsenal	-		1	1	-
Rock Island Arsenal	-		1 ✓	1	-
Frankford Arsenal	-		1	1	-
Picatinny Arsenal	-		1	1	-
Aberdeen Proving Ground	-		1 ✓	1	-
Chief, Bureau Ordnance	-		- ✓	1	-
Naval Gun Factory	-		- ✓	1	-
Chief, Bureau C & R	-		- ✓	1	-
				welding and as directed	
Local Circulation	1	1	1	1	as directed
Available for special circulation.	2	2	3	3	1
Other Establishments requesting work.	-	2	-	-	-
Private Parties paying for work.	-	-	-	-	2

UNCLASSIFIED